STUDY OF THE EFFECT OF INSTALLATION OF TURBO CYCLONE AND AIR NOZZLE ON THE PERFORMANCE OF HONDA BRIO CARS

Compiled as one of the requirements for completing the Undergraduate Study Program at the Mechanical Engineering Department, Faculty of Engineering

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MECHANICAL ENGINEERING STUDY PROGRAM

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APPROVAL PAGE

The final project entitled **"STUDY OF THE EFFECT OF INSTALLATION OF TURBO CYCLONE AND AIR NOZZLE ON THE PERFORMANCE OF HONDA BRIO CARS"** has been approved by the supervisor to fulfill some of the requirements for obtaining a bachelor's degree at the Mechanical Engineering Study Program, Faculty of Engineering, Muhammadiyah University of Surakarta.

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"STUDY OF THE EFFECT OF INSTALLATION OF TURBO CYCLONE AND AIR NOZZLE ON THE PERFORMANCE OF HONDA BRIO CARS"

It has been approved and defended before the Board of Examiners Final Project of Mechanical Engineering Department, Faculty of Engineering

Muhammadiyah Surakarta University

On March 2021

And declared eligible

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Surakarta, 8 March 2021

Author

Al Yusufa Fajar Rahmat

MOTTO

Rasulullah shallallahu 'alaihi wa sallam said,

"Be enthusiastic in things that are beneficial to you, ask Allah for help, and don't be lazy (discouraged). "

(HR. Muslim no. 2664)

“Do everything that can be done, do your best, now! Or not forever"

(Yunjiani Arrochim)

"Trying to be grateful and enjoy as it is"

(Author)

DEDICATION PAGE

With the full hope of Allah SWT, accompanied by deep feelings of gratitude and patience and high appreciation, after passing various tests in the struggle, I dedicate this Final Project to:

1. My beloved mothers and fathers (Margono & Pariyani), who have given everything to me, and there's no way I reply to all of them.
2. My extended family that always keeps me motivated.
3. Mr. Wijianto S.T, M.Eng.Sc, as the mentor who has given his thoughts, energy, and time so that this Final Project can be completed.
4. All lecturers of Mechanical Engineering, Muhammadiyah University of Surakarta.
5. All my friends who keep me moving forward, thank you for everything you give.

FOREWORD

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The author hopes that this report can be useful for readers, and for all the deficiencies contained in this report, the authors apologize profusely. The author hopes that there will be constructive criticism and suggestions. Thank you

Wassalamu'alaikum Wr.Wb.

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Al Yusufa Fajar Rahmat

Study of the Effect of Installation of Turbo Cyclone and Air Nozzle on the Performance of Honda Brio Cars

Abstract

Air nozzle and turbo cyclone are an additional tool used in the combustion engine's induced airway to maximize airspeed and convert airflow into the swirl. Eco racing is an additive mixed into fuel to increase the octane value of the fuel. This research aims to find out the effect of combustion engine performance in the form of standard power and torque with engines that utilize turbo cyclone, air nozzle, and eco racing. This research uses experimental methods where research into turbo cyclone and air nozzle has been made previously in testing to compare the performance of standard condition combustion engine with turbo cyclone combustion engine, induction water and eco racing using dynamometers. The observed bound variables are torque and power. The results showed the highest torque of 96Nm at 4600rpm in turbo cyclone, air nozzle and eco racing. The highest power is 68hp at 4750rpm engine rotation with the same components. The use of turbo cyclones, air nozzle and eco racing can improve the combustion engine's performance.

Keyword: *Turbo Cyclone, Power, Torque*

Abstrak

Induksi udara dan turbo cyclone adalah alat tambahan yang digunakan pada saluran udara masuk motor bakar yang berfungsi untuk memaksimalkan laju udara dan mengubah aliran udara menjadi swirl. Eco racing adalah zat aditif yang dicampurkan ke bahan bakar untuk meningkatkan nilai oktan bahan bakar. Tujuan penelitian ini untuk mengetahui pengaruh unjuk kerja motor bakar berupa daya dan torsi standar dengan mesin yang memanfaatkan turbo cyclone, induksi udara dan eco racing. Penelitian ini menggunakan metode eksperimen dimana penelitian memeanfaatka turbo cyclone dan induksi udara yang telah dibuat sebelumnya dalam pengujian untuk membandingkan kinerja dari motor bakar kondisi standar dengan motor bakar menggukana turbo cyclone, air induksi dan eco racing menggunakan alat dynamometer. Variable terikat yang diamati yaitu torsi dan daya. Hasil penelitian menunjukan torsi tertinggi yaitu 96Nm pada 4600rpm pada penggunaan alat turbo cyclone, induksi udara dan eco racing. Daya tertinggi 68hp pada putaran mesin 4750rpm dengan komponen yang sama. Penggunaan turbo cyclone, induksi udara dan eco racing dapat meningkatkan unjuk kerja motor bakar.

Kata Kunci: *Turbo Cyclone*, Daya, Torsi

LIST OF CONTENT

LIST OF PICTURE